Photo courtesy of Natural Resources, Joshua Tree National Park

Tortoise Times

Newsletter of
the Desert Tortoise Outreach Project
of the Desert Managers Group

January, 2007

Reducing Raven Predation

The U. S. Fish and Wildlife Service is developing a draft environmental assessment (EA) to reduce predation by the common raven on the desert tortoise in the California desert.

The proposed action would reduce raven predation on desert tortoises by integrating federal, state and local management plans and actions and developing a major public outreach and education program.

Cultural and mechanical methods will be used to reduce human subsidies of food, water, nest sites, and roosting sites, which attract and support high raven population numbers in the California desert. Aggressive nest removal and limited removal of ravens in designated areas will also be employed to help increase the threatened desert tortoises' survivorship. The proposed action will focus on zones of human development in and near desert tortoise habitat, such as communities, waste disposal sites and agricultural areas.

Scientists estimate common raven populations have increased about 700% from 1969 to 2004 in the west Mojave Desert. At these elevated population levels, raven predation on tortoise hatchlings and juveniles has removed significant numbers of young tortoises and shifted the population to predominantly adult tortoises (*Berry et al, 1986).

This EA focuses on reducing raven predation on hatchling and juvenile desert tortoises with the goal of increasing young tortoise survivorship and recruitment. Greater survivorship increases the likelihood of recruitment of young desert tortoises into the reproductively active adult population and ultimately contributes to an increase in overall tortoise population size, survivorship and recovery.

Raven management would also benefit the public through better management of trash; cleanup of illegal dumps and their hazardous materials; reduction in breeding sites for disease-carrying insects; and reduction in equipment failure, fire, and damage to power lines.

Reducing raven predation and fostering a successful desert tortoise recovery program in the California desert requires cooperation among federal, state, and local agencies and the public. As part of this partnership effort, the EA is being prepared with assistance from U.S. Department of the Interior, Bureau of Land Management, National Park Service, and Bureau of Indian Affairs; U.S. Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services; U.S. Department of Defense, Department of the Air Force, Department of the Army, Department of the Navy, U.S. Marine Corps; California Department of Fish and Game; and California Department of Transportation.

Judy Holman
US Fish & Wildlife

*Berry, K.H., A.P. Woodman, T. Campbell, J. Robertson, K.Bohuski, A. Karl. 1986. *Changes in desert tortoise populations at the Desert Tortoise Research Natural Area between 1979 and 1985*. Proceedings Symposium Desert Tortoise Council 1986; 100-123.

DMG Partners

US Department of Defense
Naval Air Weapons Station, China Lake
Edwards Air Force Base
National Training Center, Fort Irwin
Marine Corps Air Ground Combat Center (Twentynine Palms)
Marine Corps Logistics Base (Barstow)
Marine Corps Air Station (Yuma)

US Department of the Interior
Bureau of Indian Affairs (Pacific Region Office)
Bureau of Land Management
- Barstow Field Office
- Desert District Office, Riverside
- El Centro Field Office
- Needles Field Office
- Palm Springs Field Office
- Ridgecrest Field Office

Fish and Wildlife Service
- Carlsbad Office
- Ventura Office

National Park Service
- Death Valley National Park
- Joshua Tree National Park
- Lake Mead National Recreation Area
- Mojave National Preserve

Geological Survey
- National Mapping Division (Menlo Park)
- Water Division (San Diego)
- Western Ecological Research Center (Sacramento)

State of California
Department of Fish and Game
Department of Transportation
State Parks, Colorado Desert Sector
State Parks, Mojave Desert Sector

California State Counties
Kern County
Imperial County
San Bernardino County

US Department of Agriculture
US Forest Service

DESERT MANAGERS GROUP

National Fish and Wildlife Foundation

There's More To Desert Fires Than Heat

In 2005, over 700,000 acres of desert and woodland lands were burned across Nevada, Arizona, and Utah in wildfires fueled primarily by invasive Mediterranean grasses. Tens of thousands of acres of desert tortoise critical habitat were charred there and in other fires across southern California. In the aftermath of the fires, agency personnel and interested public reported finding the charred remains of desert tortoises at several sites. But they also found live desert tortoises persisting in burned areas, and nearby perimeter areas. How do these tortoises fare in their recently altered habitat?

Since first observing fire survivors in the mid-1980s, researchers have wondered about the fate of those tortoises that do not die in a fire, but are faced with a blackened and denuded landscape that is dominated by annual plants in future years. The annual plants are the primary food of Mojave Desert tortoises, but the landscape may be relatively barren of perennial plants that are important for cover.

Preliminary findings from one study in Arizona by USGS, the University of Arizona, and National Park Service concluded that there was little difference in the behavior of tortoises on burned versus nearby unburned habitat. But the Sonoran Desert provides a great deal of topographic relief for protection from thermal extremes and with twice as much rainfall as the Mojave Desert, Sonoran vegetation re-sprouts and provides additional shelter relatively quickly—unless there are repeated fires. In contrast, after fires in the Mojave Desert, most of the widespread desert tortoise habitat is left with much less vegetation structure and may present desert tortoises with fewer options for cover from environmental extremes and predation. Furthermore, without shrubs and bunchgrasses as nurse plants, many desert perennials that provide needed cover may not return to these areas even when there is a natural seed source or artificial re-seeded source in burned areas. The nurse plants provide a protective micro-environment where seeds preferentially lodge in the soil, germinate and become established.

The ultimate fate of desert tortoises faced with dramatically altered habitats has remained in the realm of speculation until now. In 2006, a research team from USGS supported by U.S. Fish and Wildlife Service, Bureau of Land Management (BLM), and Nevada Department of Wildlife, initiated research to determine if and how desert tortoises use habitats on and near large burned sites. VHF radio-telemetry is used to follow the movements of desert tortoises after first being located on burned sites or nearby in unburned sites. The team will study the movements and habitat use of the tortoises for at least 3 years.

Sawtooth Complex Fire - Summer, 2006

If funding becomes available, new technology will replace the traditional hardware and the team will combine VHF telemetry with GPS technology for much finer resolution of behavioral data. This project has the added benefit of being conducted in collaboration with a substantial vegetation monitoring program funded by BLM's fire program and implemented by USGS researchers.

The work will culminate in the merger of data from the monitoring program with the data collected on desert tortoise habitat use to determine the efficacy of desert restoration techniques commonly used now across the Mojave Desert. Once this type of study is proposed, the first hurdle is getting enough desert tortoises telemetered to conduct the research – fortunately that has not been a problem. To date, over 17 desert tortoises have radios attached to help us learn about their activities related to habitat change by fire and our efforts to mitigate those disturbances.

Todd Esque
U.S. Geological Survey

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Coordinator's Corner

In 2004, the DMG initiated the desert tortoise information and education project. The goal is to increase public awareness of the plight of the desert tortoise. The managers believe that an educated public that appreciates the value of the desert tortoise and understands how human activities and other factors are contributing to its decline is fundamental to a successful recovery effort. Specifically, the priority public messages identified by the DMG are teaching the public about the proper disposal of trash, the importance of staying on open roads and trails, the necessity of not handling tortoises, and the consequences of releasing pet tortoises into the wild.

The desert tortoise education strategy began in October of 2005 at the California Science Teachers Conference in Palms Springs, California. Teachers were given information about the desert tortoise and promotional items that invite students to go online and enter the Mojave Max Emergence Contest. At *mojavemax.com* students can learn about desert tortoises, weather, environment, and enter their guess when Max will emerge from his burrow.

In January 2006, letters of introduction and Mojave Max rack cards were sent to Outdoor Education Specialists in eight target counties in Southern California. Letters and rack cards were also sent to public libraries, turtle and tortoise groups, youth clubs, scouting and other organizations. A Mojave Max public service announcement was recorded and sent with press kits to a number of Southern California radio stations. Environmental educators and interpretive staff were asked to include information about the Emergence Contest in their programs. A print story about Mojave Max was written and distributed to the print media, and posted to the DMG web page.

In partnership with Joshua Tree National Park Association, a grant was submitted to The California Community Foundation. A $4,000 grant was awarded for desert tortoise outreach activities from the Community Foundation through the Desert Legacy Fund. Funding was used to purchase awards for teachers and students that participated in the Mojave Max Emergence Contest, and also to sponsor classroom events.

Two Desert Tortoise education kits (Tortoise Trunks) have been developed by Joshua Tree National Park education staff and the DMG Desert Tortoise Outreach Coordinator. Classroom educators involved with environmental education have reviewed both kits. As funding becomes available the kits will evolve, with new components. We

Mrs. Bonnifin's 1st grade class
Owens Valley Elementary School, Independence, CA

hope to develop a DVD about the desert tortoise and an electronic game. Eventually there will be six kits (three for each grade level). The kits will also have the curriculum and educational materials translated into Spanish. We are planning to preview the kits at events such as California State University, Environmental Expo. April 21, 2007 (Earth Day).

The first year was a good start. We will continue to extend our media contacts. We have begun discussions with college instructors to train college students as environmental education speakers, in hopes of taking the desert tortoise message to more schools and civic groups in the near future. Changing the direction of human behavior is a daunting task, but a plan is in place to bring the desert tortoise's plight to the public.

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